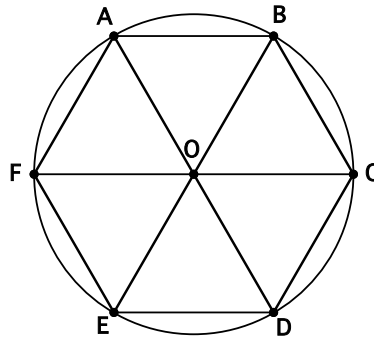


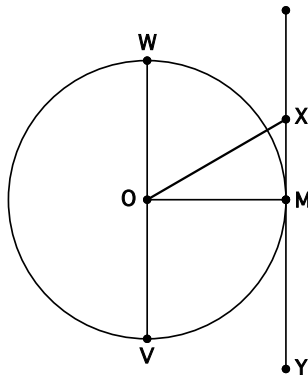
**For each question, you need to find the answer and show your work. Each problem is worth 3 points: one for the correct answer, and two for showing your work. For some problems, you may just need to write out how you know you have the correct answer.**

The figure shows a regular hexagon inscribed in circle  $O$ . The radius of the circle is 8. Use the figure to answer questions 1-3.



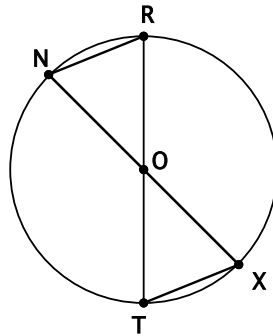
1. What is the measure of  $\angle BOD$ ?
2. What is the measure of  $\angle AOF$ ?
3. What is the measure of  $\widehat{BC}$ ? How do you know?

$\overline{XY}$  is tangent to circle  $O$  at point  $M$ . The length of  $\overline{WV}$  is 26 mm and  $\overline{XM}$  is 8 mm. Use the figure to answer questions 4 and 5. (Not drawn to scale)



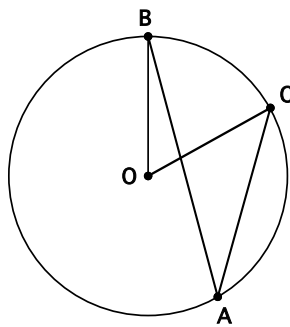
4. What is the length of  $\overline{OM}$ ? How do you know?
5. What is the length of  $\overline{OX}$ ?

In the figure below,  $\overline{NX}$  and  $\overline{RT}$  are diameters of the circle.  $\triangle NOR$  and  $\triangle TOX$  are equilateral triangles. The length of  $\overline{RT}$  is 18 cm. Use the figure to answer questions 6-8. (Not drawn to scale)



6. What is the measure of  $\widehat{TX}$  ?
7. What is the measure of  $\widehat{XRT}$  ?
8. What is the length of  $\widehat{NRT}$  ?

9. The  $m\angle BOC = 72^\circ$  . Find the  $m\angle BAC$  . How do you know your answer is correct? (Not drawn to scale)



10. Refer to the figure in question 9. What is the length of  $\widehat{CAB}$  if the radius is 6 in?

**Open-Ended Question: You may answer on this sheet or on a separate sheet. Make sure as you answer the open-ended question that you show your work AND explain how you know you are doing the correct work. YOU MUST EXPLAIN WHAT YOU ARE DOING!!!**

Thirty-five out of 80 vehicles crossing a certain intersection during a five-minute period were SUVs. This data is being collected in a circle graph (not shown).

A. What is the ratio of SUVs to all vehicles? How can you show that ratio as a decimal? How can you show that decimal as a percent?

B. How many degrees are there in the measure of a circle? What is 43.75% of  $360^\circ$ ?

C. What will be the measure of the central angle in the section of the graph that represents the ratio of SUVs to all vehicles? Complete the circle graph.

